



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

B. Foulger, et al.

Serial No.: 09/889,639

Filed: December 4, 2001

For: FIRE DETECTION METHOD

Group Art Unit: 2881

Examiner: P. Gurzo

May 23, 2003

Attorney Docket No. 41577/261336

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**AMENDMENT, RESPONSE, AND  
PETITION FOR EXTENSION OF TIME**

Dear Sir:

This paper is submitted in response to the Office Action mailed January 29, 2003 in connection with the above-referenced application. A marked-up version of amended claim 1 is attached hereto behind Tab A.

**Amendment**

Kindly cancel claims 2-16 without prejudice.

Kindly amend claim 1 to read as follows:

1. (amended) A method for detecting a heightened risk of the onset of fire of an electrical component comprising the steps of sampling the atmosphere around the component using an ion mobility spectrometer

c1  
and detecting a change in the ion mobility spectrum that is  
characteristic of overheating of the component.

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Kindly add claims 17-22 as follow:

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17. (new) A method according to Claim 1, in which the change is  
indicative of an increase in the emission of a target gas or vapour from  
the component.

c2  
18. (new) A method according to Claim 1, comprising the further step  
of triggering an alarm on detecting the change.

19. (new) A method according to Claim 17, comprising the further step  
of triggering an alarm on detecting the change.

20. (new) A method according to Claim 1, in which the component is a  
printed circuit board or a resistor.

21. (new) A method according to Claim 17, in which the component is  
a printed circuit board or a resistor.

22. (new) A method according to Claim 18, in which the component is  
a printed circuit board or a resistor.

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## Response

### A. Introduction

Claims 1-16 were pending prior to entry of the preceding amendments, and claims 1 and 17-22 are pending now. The Examiner initially rejected the pending claims under 35 U.S.C. §§ 102(b) or 103(a), citing principally U.S. Patent No.

5,405,781 to Davies, et al., in some cases together with U.S. Patent No. 5,585,575 to Corrigan, et al., U.S. Patent No. 5,859,375 to Danylewych-May, et al., or U.S. Patent No. 5,065,140 to Neuberger. According to the Examiner, the Davies patent discloses

the use of an ion mobility spectrometer to detect gases or vapors emitted from materials under conditions at which there is a risk of the onset of fire and detecting the ion peak of the volatilized material.

See Office Action at p. 2. Referencing column 6, lines 15-21 of the Danylewych-May patent, the Examiner further contends that the Danylewych-May patent teaches “an apparatus that inspects electrical components.” See id. at p. 3.

### B. Claim 1

Clear, however, from the Danylewych-May patent is that inspection of electrical components occurs *only* for the purpose of locating contraband (in the form of explosives or narcotics) or “chemical warfare agent liquid droplets and aerosols.” See Danylewych-May, col. 1, ll. 13-20. Accordingly, the Danylewych-May patent contains *no suggestion whatsoever* of detecting any *heightening of risk of the onset of fire of any electrical component*. Likewise, because the Danylewych-May patent is unconcerned with fire prevention, it neither discloses nor contemplates detecting any change in an ion mobility spectrum *characteristic of overheating of an electrical component*.

Nor is such detection addressed in the Davies patent, upon which the Examiner principally relies. Disclosed in the Davies patent are method and apparatus for detecting small quantities of explosives and narcotics through removing water vapor from drift gas. Samples are prepared for analysis by collection and vaporization of particle residues from surfaces inevitably contaminated when explosives or narcotics are handled. See Davies, col. 1, ll. 5-63; col. 2, ll. 38-62. The Davies patent hence *fails even to mention electrical components*, much less disclose detecting any heightened risk of the onset of fire of an electrical component by detecting change in an ion mobility spectrum characteristic of overheating.\*

Without conceding the correctness of the Examiner's initial rejections, Applicants have clarified claim 1 to exploit these differences between the invention and the references cited by the Examiner. Revised claim 1 addresses:

***A method for detecting a heightened risk of the onset of fire of an electrical component*** comprising the steps of sampling the atmosphere around the component using an ion mobility spectrometer and ***detecting a change in the ion mobility spectrum that is characteristic of overheating of the component.***

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\*The Corrigan patent similarly discusses detecting explosives or narcotics by sampling large volumes of air and is unrelated to detecting heightened risk of fire onset or changes characteristic of overheating of electrical components. See Corrigan, col. 1, ll. 15-24. While the Neuberger patent relates to warning systems for developing fire conditions, its systems employ zinc-coated quartz crystal oscillators and considers oscillation-frequency changes following reaction of the zinc coating with certain gases. See Neuberger, col. 2, l. 64 through col. 3, l. 11. These systems are wholly unrelated to (and likely not compatible with) those of the Davies, Danylewych-May, and Corrigan patents and thus not properly combined by those of ordinary skill in the art of those patents. Moreover, even were such systems (improperly) to be combined, the only possible detection of overheating of electrical components would occur through the frequency change in the oscillators specified in the Neuberger patent, unlike what happens in the present invention. (Yet additionally, clear is that none of the cited references discloses direct sampling of the atmosphere surrounding electrical components by ion mobility spectrometry, as it is impracticable to sample surfaces of electrical components with a hand-held device and subsequently analyze particles obtained thereby in order to detect a *risk* of fire onset through overheating of the components.)

As noted in the application, electrical components may change characteristics (as, for example, by releasing volatile material) when heated. Hence, detecting changes characteristic of overheating may facilitate detection of increased risk of onset of fire potentially caused by the overheating. Because the Danylewych-May, Davies, and other patents of record fail to disclose or suggest at least these aspects of the claimed invention, Applicants request that claims 1 and 17-22 be allowed.

### **Petition for Extension of Time**

Pursuant to 37 C.F.R. § 1.136(a), Applicants petition the Commissioner for all extensions of time needed to respond to the Office Action. Enclosed is a check for \$110.00 for the petition fee. Applicants believe no other fee presently is due. However, if Applicants' belief is mistaken, the Commissioner is authorized to debit Deposit Account No. 11-0855 for any additional fee due as a consequence of Applicants' submission of this paper.

### **Conclusion**

Applicants request that the Examiner allow claims 1 and 17-22 and that a patent containing these claims issue in due course.

Respectfully submitted,

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